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GUERSANT ON SURGICAL DISEASES OF INFANTS, ETC. 8 PAGES.

CLINICS.

CLINICAL LECTURES.

Clinical Lecture on Tracheotomy. By JOHN WOOD, F.R.S., Surgeon to King's College Hospital.

GENTLEMEN: Since we last met, before the Christmas vacation, there have been one or two cases requiring tracheotomy in the wards of the hospital. As this operation is usually called for on an emergency, it seldom happens that the whole class have an opportunity of seeing the conditions which demand the operation, or of estimating the manner in which it can be done most expeditiously and safely. The spectators of the operation are mostly those who are employed in continuous offices in the hospital, with some whose constant and steady zeal for practical knowledge overcomes the tendency to absent themselves from the hospital except when their presence is expected on stated occasions. Yet it is not the less desirable on that account to lay before you as a class the reason why, and the manner how, an operation so important and so frequently called for should be performed. It is one which all of you who practise your profession will at some time or other be called upon to perform. And it must usually be performed urgently, immediately, and with a decision which can only be properly obtained by a premeditated consideration of all the possible contingencies that may arise, of all the instruments that may be required, and with a fair knowledge of the anatomy of the parts concerned.

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In the first place, I must premise that there are no less than three operations for opening the windpipe in cases of obstruction to the respiration in this part of the respiratory passage, each of which possesses advantages that render it the most properly applicable in certain circumstances. These I propose briefly to lay before you in this lecture. To enable you the better to understand why they are severally more fitted we must consider the operations themselves and the site in which they are performed.

The operation of *laryngotomy*, as being placed the highest in the tube, and as the most simple, I will take first. It is performed in the crico-thyroid space by dividing the thin but tough and elastic membrane which connects the inner surface and lower border of the thyroid with the outer surface of the cricoid cartilage. This space is placed immediately below the true vocal cords, and of course below, or to the lung side, of that important strait or movable gateway through which we inspire the breath of life. Now the true vocal cords have a character in reference to the mucous membrane that covers them which has an important bearing upon the limitation of morbid affections of the larynx and trachea. The membrane which covers their highly elastic fibrous structure is very closely adherent to its substance. Above them the mucous membrane of the larynx is much more loosely connected by a submucous areolar tissue, which is apt, when inflamed, to swell up so as to overlap and overhang the chink of the glottis and obstruct respiration in this manner. It is also more liable to the ulcerative processes common in syphilis and phthisis, as well as to the spread of traumatic, erysipelatous, or diphtheritic inflammation from the mouth, fauces, and pharynx. Foreign bodies passing from the mouth, if irregular or pointed in shape, or somewhat soft in structure, are liable to become impacted in the same situation; and, lastly, tumours more frequently grow from the walls of the larynx or its marginal structures at a level above the vocal cords.

The close proximity of the crico-thyroid space to the rima glottidis enables the surgeon readily to open up the interior of the larynx by dividing the thyroid cartilage vertically, should the nature of the obstruction require it, or to pass instruments through the chink of the glottis to dislodge impacted bodies. Many of these are advantages which can often not be appreciated before the operation is commenced, and in the proper choice of a position is embraced the capability of meeting an enemy in various and unexpected combinations. Perhaps an advantage which would be reckoned by many as greater than any of these is the important one that this operation is much more simple, less dangerous, and more quickly and readily performed, in cases of impending suffocation, than any other upon the windpipe; and it is one which may be performed by almost any bystander with ready nerve, decision, and a tolerably sharp penknife. The crico-thyroid space is very superficial, placed at the most forward part of the curve of the trachea, immediately below the projection of the thyroid cartilage called the "pomum Adami." Below this point the windpipe pursues a backward and downward course, receding rapidly from the surface, while the outline of the neck is sloped considerably forwards down to the sternum by the sterno-mastoid and other muscles, and by the interposition of the thyroid gland. In the median line the membrane is covered only by the skin and fascia, but on each side the crico-thyroid muscles diverge from their origin to their insertion into the thyroid cartilage, so as to leave a triangular interval, with its base upwards, uncovered by muscle. Further out are placed the sterno-hyoid, thyroid, and thyro-hyoid muscles, which need scarcely be touched in the operation. A very small branch of the superior thyroid artery crosses the space to anastomose with its fellow, giving off on each side a very small twig through the membrane, called the anterior laryngeal. You see, therefore, that there is only skin and fascia, with a few of the innermost fibres of the crico-thyroid muscle, and perhaps this very small artery, which need to be cut in the operation. The wound of this artery has been said, however, to cause death in a very young child, already more than half suffocated, by bleeding into the trachea;

but any hemorrhage from this minute source can always be stopped by the pressure of a tube passed through the opening, or by a cold sponge. When the vessel is, as sometimes happens, irregularly large, its very superficial position will indicate its presence beforehand, or enable it to be readily secured by twisting or ligature.

In the text-books you are directed to make first a vertical cut an inch long from the pomum Adami downwards through the skin and fascia, and then to cut horizontally the crico-thyroid membrane close to the upper border of the cricoid cartilage. Now, under a sense of impending suffocation, patients usually throw the head backwards, and this movement stretches the skin of the neck and tends to close this vertical incision, and thus to interfere with free inspiration through the wound. But this frequent movement tends, on the contrary, to open a transverse cut in the tissues. I therefore prefer, with a sharp, small-bladed knife (double-edged, if at hand), to make a single transverse incision across the lower part of the hollow depression felt by the finger, just above the cricoid ring, through the skin and membrane at once, right into the windpipe, and to extend it sufficiently laterally to introduce a tube. Such a wound will remain open even without a tube; sometimes, indeed, the patient will breathe easier without one. If a tube be used, it should be broader in the transverse than in the vertical diameter, and shorter in the length between the shield and the curve than the one adapted for tracheotomy. Upon the latter point I shall have more to say subsequently.

Sometimes the incision is found, in a narrow female or infantile larynx, to be too limited to permit free respiration or manipulation. In such a case I should extend it by a median vertical incision downwards through the cricoid cartilage, or, if the case demanded it, upwards through the thyroid. Experience has found that such openings in these cartilages heal well, and without producing the contractions or mechanical disarrangement of the laryngeal apparatus which were formerly dreaded.

The circumstances under which laryngotomy is advisable are those which are found in the fauces, throat, larynx, and rima glottidis; with the addition of those in which foreign bodies in the trachea and bronchi are freely movable, hard, and smooth, and which would consequently pass out either through the wound or through the glottis after the trachea is provided artificially with an alternative channel of respiration. Most cases of impaction in the rima glottidis by foreign bodies, by tumours growing from the ventricles of the larynx, epiglottis, or vocal cords, or by inflammatory swelling, which is traumatic or non-spreading, would be included in this category; and it might embrace many cases also of syphilitic or phthisical ulceration of the larynx in which the disease does not extend below the true vocal cords.

Above all operations, that of *tracheotomy*, being one of haste and emergency, demands the most simplicity in the construction, use, and number of the instruments employed. Numerous contrivances for opening the trachea have been invented, some with more or less theoretical excellences; but all these may be stultified by not being at hand, not being properly used, or necessitating an embarassing change of instruments in the operator's hand at a critical moment of the operation.

I have been accustomed ordinarily to use, and to recommend the use of, three instruments only—namely, a single-edged pointed scalpel; a pair of slender and somewhat elongated forceps, provided with a single hook at the ends, which project very obliquely towards and fit each other in the manner of the teeth of a rodent animal; and, lastly, a tracheotomy tube of appropriate size, constructed with an outer pair of spring blades held firmly together by a shield, and an inner tube which slides between them, and which can be removed for the purpose of cleanliness.

I usually prefer to stand on the left side of the patient, so as to cut upwards from, and not down towards, the sources of danger in the lower part of the neck; but it is not in all cases possible to have this choice.

The two operations of tracheotomy are performed respectively above and below the isthmus of the thyroid body. The

former is by far the more readily performed, and involves the fewest dangers during and after the operation. The site of the primary incision is, in both, pretty nearly the same—namely, the same vertical incision in the median line of the neck, about two inches long, and extended a little higher or lower as the case may require. In a short neck, whether infantile or adult, the incision extends downwards nearly to the top of the sternum when the operation is performed below the thyroid. If the upper operation is at first intended, and afterwards it is seen that the lower one is preferable, the change can readily be effected by extending the incision downwards. After cutting through the skin and fasciæ, a small anastomosing tributary of the anterior jugular is often divided, but gives little trouble beyond slight pressure with the finger. Sometimes, however, this communicating branch is enlarged so as to assume the proportions and functions of the entire trunk, and passes into the vein on the opposite side of the neck, and may require ligature. The sterno-hyoid and thyroid muscles are now exposed, the latter meeting each other in the median line, which is indicated by a mere areolar interval. Through this, as nearly as possible, the knife should next pass, and the muscle be held aside with the hooked forceps. A fascia covering the isthmus of the thyroid and the communicating branches of the thyroid arteries and plexus of inferior thyroid veins is now exposed. The surgeon can at this stage open the trachea either above or below the thyroid gland. To accomplish the former is, as I have said, more easy, on account of its comparatively superficial position. The windpipe is here covered pretty nearly by the same kind of structures as it is below; but the effect of the direction and action of the sterno-mastoid muscles, as soon as the skin and fasciæ are divided in the median line of the supra-sternal fossa, is to raise the edges of the wound, and to increase its depth very much at the lower part of the neck. The inferior thyroid plexus of veins is also met with below the thyroid isthmus, and in most cases requiring tracheotomy these are gorged and distended to the utmost on account of the arrest of respiration, and, when cut, bleed very profusely. Again, to the sides of the larynx are attached the strong muscles, the actions of which balance each other and hold it laterally tolerably steady. But since no muscles are attached to the trachea at the lower part of the neck, nor any fascial or other structures which would steady it laterally, it is moved about and sometimes even contorted by the plunging spasmodic respiration and heaving chest, and may be very difficult to fix, especially in young children. The nearer you get to the larynx, therefore, the steadier laterally does the trachea become, and the easier to fix and penetrate. The tracheal cylinder also diminishes somewhat in width downwards. And with the depth of the wound, the amount of the bleeding, and the motion and smallness of the trachea increase the difficulties and dangers of tracheotomy.

If it is determined to open the trachea above the isthmus of the thyroid, the upper part of the fascia which invests the gland and connects it with the trachea must be seized with the forceps, and the point of the knife applied so as to cut or scratch through it horizontally. The handle end may then be placed under the isthmus and made to push it downwards, and at the same time to separate it to a sufficient distance from the trachea. The isthmus varies much in bulk, being larger in females, and, proportionately, in children, than in the adult male. It seldom covers the first ring of the trachea, being usually placed opposite the second and third. Usually it may easily be displaced downwards so as to permit division of the three upper rings. To accomplish this, seize the fascia covering the fibro-cartilage or upper cartilaginous spaces as low down as possible, and a little on one side of the median line, with the hooked forceps, the teeth of which, projecting well downwards, will bite easily into its substance. Then, guided by the interval between the double straight blades of the forceps, pass down the scalpel and puncture the windpipe vertically, afterwards extending the incision upwards as far as the cricoid cartilage. A rush of air mixed

with sputum and blood usually follows the puncture; and sometimes, in the confusion and nervousness caused by this coming in his face, the young operator loses his self-possession, and lets go the trachea before a most essential part of the operation is accomplished—namely, the introduction of the silver tube. Now, for a speedy and satisfactory conclusion of the operation, it is essential that the hold upon the trachea, being once obtained, should not be let go; but, the knife in the right hand being changed for the outer part or spring sheath of the tube, this should be firmly compressed between the finger and thumb and carried down along the forceps through the tracheal wound, and then pushed in a curvilinear manner home to the shield. The holes in the sides of the shield should be first furnished with narrow tapes, conveniently rolled up, to be tied round the neck, to hold in the instrument when the operation is completed. The inner tube should not usually be passed in until some of the spasm consequent upon the operation has passed away. The manipulation of the trachea must usually be done (after the first glimpse has been obtained) by the feel rather than by the sight. When the forceps has obtained a proper hold, it acts very efficiently in the double capacity of a holder and a guide to the knife as well as to the trachea-tube. If sufficient room cannot be obtained by pushing down the thyroid isthmus, the incision may be extended upwards through the cricoid cartilage. Although it is perhaps better to avoid this if possible, yet its performance is not usually attended with any after-inconveniences.

When it is intended to open the trachea below the thyroid isthmus, it may be necessary to carry down the external incision a little further. The fascia inclosing the inferior thyroid veins in the middle line should be carefully cut or scratched through by the combined use of the knife and forceps; the communicating veins should be rather torn than cut, the tension necessary to tear them being beneficial in forcing back the blood contained in them, and rendering them less liable to bleed for a few minutes, until the tube has been introduced and the blood kept out of the trachea. In this case the inner tube should be put in immediately to stop out the blood as much as possible. In performing this lower operation increased dangers beset the operator from the close contiguity of the left innominate vein and the innominate artery. In very young children, also, the size and high position of the thymus gland may be a source of embarrassment. It may project out of the cavity of the thorax and overlap the left innominate vein, which, usually in these cases turgid with blood and provided with thin coats, may easily be injured either with knife or forceps in pushing downwards the protruding thymus. The innominate artery here lies to the right side of, and somewhat upon or in front of, the trachea, and in many adults even may be seen and felt to pulsate inside the sterno-mastoid in the suprasternal fossa. The difficulties in opening the trachea are increased under these circumstances by the much greater depth of the windpipe, by the bleeding from the inferior thyroid plexus of veins, and by the more mobile nature of the trachea at the point operated on. In young children these difficulties are increased by the small size and yielding nature of the walls of the windpipe itself, the wound in which can best be made, and, when made, held open for the introduction of the tube, by steady traction with the hooked forceps lifting forward one lip of the slit in the windpipe, so as to elevate it above the other. The closed valves of the outer tube can then usually be easily introduced by a slight sideling motion. A fault often committed by young operators consists in letting go the trachea through the movements of the patients or nervousness, or in changing instruments before the opening in the tube is made sufficiently large. Then the air rushing out of the incomplete wound, mixed with blood, froths and churns up out of the wound, and obscures all the landmarks of safety. An attempt is then made to enlarge the opening in the windpipe, with the effect probably of making a second and independent wound. The remedy for this is to get a firm hold of the trachea, and not to let go until the tube is fairly lodged. It is advisable in using the knife in this situation, and under

these circumstances especially, always to keep the back of the knife towards the sternum, so as to avoid touching the distended innominate vein or innominate artery. In persons past the middle age the difficulties assume a different shape. They usually arise from the ossification of the tube, or some morbid change in or near the thyroid gland. In case of the patient being beyond middle age, and of the male sex especially, in whom calcification of the trachea is more common, it is advisable to be provided beforehand with a pair of strong scissors, or cutting forceps bent edgewise at the joint, with short, stout blades, of which the under one is pointed; these are provided with long handles of convenient thickness. If the scalpel fails in making impression upon the trachea, this can be substituted, the sharp blade being thrust through and turned upwards in the tube. With this it will be easy to divide an ossified trachea, or even to remove a piece, if desirable. The lower operation may be required in cases of tumour of the thyroid isthmus, of foreign bodies impacted near the bronchi, and in removing the false membranes in croup.

Among the dangers of the lower operation of tracheotomy must be reckoned, in addition to those of the operation itself, such as bleeding from the inferior thyroid plexus of veins, wounding the inferior thyroid artery by a slip of the knife on one side of the trachea, or of the innominate vein or artery, those consequences which are secondary—viz., infiltration of air into the anterior mediastinum and general subpleural tissue, or of blood or pus into these structures, and the embarrassment of breathing and other bad symptoms which may ensue thereupon. One source of danger which has proved fatal in many instances, some of which have been recorded in the Transactions of the Pathological Society during the last few years, arises during the subsequent wearing of the tracheotomy tube under the constant friction of the chest-walls in breathing. A progressive ulceration, either downwards from the shaft, or forwards from the point of the tube rubbing against the anterior wall of the trachea, has at length opened into the innominate artery, and proved suddenly fatal by hemorrhage into the bronchi. Another danger is the separation of the shaft of the trachea-tube from the shield at the joint which unites them, permitting the shaft to slip entirely into the trachea. Two cases of this kind have occurred in the practice of Mr. Henry Lee, and of Mr. Holthouse, and were brought forward at the meeting of the Royal Medical and Chirurgical Society on Jan. 9th, 1872, necessitating another subsequent operation for the extraction of the tube. A valuable suggestion was made on this occasion by Mr. Brudenell Carter, that the shield and tube should be made in one piece of metal, without the intervention of solder, which corrodes sooner and more easily, or that the joint should be gilded over to guard it from the combined action of air and liquid secretion. It is not, however, this action alone which contributes to this unfortunate result, but also, and more powerfully I believe, a defect in the shape of the tube usually employed. For the lower operation of tracheotomy the shaft of the tube between the shield and the curved part is, for male adults especially, much too short. The consequence is, not only a difficulty in making the tube lie evenly and comfortably in the trachea and with the lower opening fairly in a line with the axis of the trachea, instead of being inclined, as it usually is, so as to look towards, and press with its sharp edge upon and rub against, the anterior wall just under the innominate artery—but there is also a considerable traction inwards exerted by the concavity of the curve lying in the trachea, against the shield resting obliquely upon the surface of the skin. It is this traction, combined with the suction power and constant motion exercised by the chest in respiration, which contributes most to separate the parts of the tube from each other, and to suck in the shaft of the instrument. For the upper operation of tracheotomy the tubes in common use do very well under ordinary circumstances; but for the lower operation in adults, where the trachea lies an inch and a half deep, and may lie deeper, as in cases of tumefaction from emphysema, inflammation, solid growths,

or spinal and chest deformity, it is essential that the length of the tube from the shield to the culm of the curve, should be *an inch and a half*, instead of barely half or three-quarters of an inch, as we find in the tubes at present in use.

I must here impress upon you the great importance of proper care and treatment subsequent to this operation. After clearing the tube from blood and thick, viscid mucus, the air which is inspired through the tube must have communicated to it the moist and warm characters which it normally acquires in its passage through the nose, mouth, fauces, and larynx. This can be done immediately by dipping a large coarse sponge, well cleansed, in water of a temperature a little above that of the body, and tying it loosely on each side to the tape which encircles the neck. As soon as possible, also, the air of the sick chamber should be made warm and moist by a steam kettle with a long tube placed on a good fire. In large rooms or hospital wards it is better to erect a sort of tent of blankets over the bed, close beside the fire, and put the mouth of the steam tube under it. A great many tracheotomy cases, both in children and adults, die afterwards from bronchitis and pneumonia, which, sometimes brought on, are always aggravated by the admission of dry cold air to the lungs. The above precautions are of course even more necessary in cold and frosty weather.

In conclusion, there is one point which it may happen to be important to keep in mind, and that is, the duty of completing and finishing these operations upon the windpipe, when once begun, in the face of every possible eventuality which may arise in the course of it, even up to and beyond the apparent death of the patient. In no case is the truth of the saying, "while there's life there's hope," more paramount than in operations to relieve suffocation, to which, as in cases of drowning, the higher truth may be almost applied, that "beyond life there's hope." One of the most striking instances of resuscitation after apparent death during tracheotomy I have been lately witness to. A few weeks ago I was called in the middle of the night to the relief of a medical man, considerably beyond middle age, suffering from laryngitis combined with bronchitis. On hastening to his house, which was a considerable distance from my own, I found Dr. Goddard, of Edgeware road, in attendance, who had judged very rightly that an operation afforded the only remaining chance of relief from the very threatening symptoms presented by the poor patient, and had accordingly requested my assistance. A glance at the distressed countenance and the dusky lips and finger-nails, a hurried pressure of the failing pulse, a brief listening to the raucous laryngeal noise and heaving chest, deprived of vital air, led me, after a hasty consultation, fully to coincide with the imminent necessity for tracheotomy, with a view of at least prolonging life. While the rapid incisions were being made to expose the trachea, the patient suddenly ceased to breathe altogether, the pulse stopped, the eyes rolled over and seemed to become glazed, and after a brief spasm of the facial muscles, usually observable just before dissolution, all seemed to be stilled in death. A considerable obstacle was now met with in extensive and very hard ossification of the trachea, upon which the scalpel made little impression. With the words upon my lips, "I fear we are just too late," but remembering the maxim I have endeavoured to impress upon you, I persevered notwithstanding, and by the exercise of considerable force, and by first converting the edge of the scalpel into and then using it in the fashion of a saw, I got through the hardened trachea and passed in the tube. After employing the usual methods of artificial respiration, we were in a few minutes encouraged by a gentle sigh of inspiration; and in less than a quarter of an hour the patient was sitting up in bed, breathing freely through the tube, expressing himself as comfortable, and writing upon a slate a professional criticism as to the urgent necessity of the operation and the dexterity of its performance.—*Lancet*, March 9, 1872.

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Abstract of a Lecture on Typhoid Fever. By Sir WILLIAM GULL. Delivered at Guy's Hospital, June 20, 1872.

[We copy from the *Lancet* (June 29,

1872) the following "full abstract" of the above very interesting and instructive lecture. This lecture derives additional interest from the fact that its distinguished author was one of the medical attendants of the Prince of Wales during his recent severe attack of typhoid fever.]

The Lecturer began with the remark that it is about two hundred and fifty years since one of the kings of England died of ague; but now the improved condition of agriculture and drainage in this country is such that ague has become rare, and certainly very few die of it. He then expressed his belief that two hundred and fifty years hence few will die of typhoid fever, inasmuch as this disease is as preventable as ague. Typhoid fever is, *par excellence*, to be ranked amongst "diseases," because it is caused by a virus—a virus of nature—which may get into the healthy body, and increase in it, and destroy it. It is an accidental condition, and not one of the ordinary processes of nature. Therefore we ought to rise up in arms against it, as we Englishmen would rise up in arms against any enemy that should attack us or threaten us.

Sir William said that he was not going to give a lecture on typhoid fever, as such a thing would be impossible in the time allotted; but he appealed to those present, as Guy's students, to sympathize with him, as a Guy's man, in the late conditions which have given rise to the increased attention to the subject of typhoid fever. Many diseases that were formerly very fatal are recoiling before the advances of civilization—to wit, the plague, ague, and even cholera. Typhoid fever is stated to kill 17,000 a year in England; how great, then, must be the number attacked! It stood among the preventable diseases, and it was important, therefore, to know how it originates. There is no scientific theory, but there is a good working theory on the point. The origination of the disease is, somehow or another, connected with drainage. It has, therefore, been called the filth fever; hence to get rid of the filth is to get rid of the fever. It seems as if this really is so, for Millbank Prison was infested with typhoid and dysentery, but now the water-supply has been changed, and the drainage attended to, and these diseases have almost entirely disappeared. No one can approach a case of typhoid fever without paying some attention to hygiene. It is no use tinkering with the disease if one does not try to prevent it, and it no doubt may be prevented. The theory is that it is connected with germs which get into the blood; we know nothing about these germs—the air is full of them. There is an idea that they are imbibed by drinking water, and that they increase and multiply within the body. Although this has not been demonstrated, yet it is a good working theory.

The first thing then to be done is to find out what will prevent the disease. Some may say, "Tell us what will cure it;" but this is not of such importance as prevention. Sir William next said that he liked the name *typhoid* because the disease resembled *typhus*, and yet it was not typhus. It is an error to suppose that there are symptoms of typhoid fever essentially, as the poison may get into the body, and destroy life, without setting up any symptoms of typhoid fever proper. Some years ago a case was taken into Guy's Hospital, the patient having become suddenly ill; and shortly after admission he died, but the cause of death was not suspected till a post-mortem examination revealed perforated typhoid ulcers of the intestines. This patient had gone about his work regularly up to the day of his death. The next subject is the diagnosis of this disease. This is sometimes at first uncertain; the patients rarely come till they have been ailing some time. The furred tongue, headache, malaise, etc., belong to other diseases besides typhoid fever, therefore the term typhoid is a good one, because the symptoms somewhat resemble those of typhus. Many other names have been given to this disease, but the one most generally adopted is typhoid fever. It has been called pythogenic fever, from its supposed origin from filth; but it is not advisable to accept this name, as at some future time it might be necessary to change again.

The history of an attack of typhoid fever is somewhat obscure. The poison lurks in the body some time before the real

onset of fever; it may be as long as five or six weeks. The disease then begins insidiously and irregularly; the prodromata are uncertain. Where does this poison work? Is it in the intestinal tissue, or in the mucous membranes, or in the absorbent system? We do not know; we say that it is in the blood. Where are these lurking beginnings? These are probably in the intestinal system, for we find digestive disorders and disturbance of the bowels in the first instance. It is, however, very difficult to say when the disease begins; but if the ordinary course of health be represented by a straight line, we shall find at the commencement of the disease an abrupt deviation from this straight line, and which deviation goes on increasing till the fourth to the sixth day; consequently, we find that on the fourth day the patient is ill, and on the fifth or sixth day very ill and obliged to keep his bed. It is about this time that we first see these patients as a rule, and how are we to tell that they have got fever? Well, by the little instrument called the thermometer. Now, if on even the first day the temperature be normal in the afternoon, there is no fever. In typhoid the temperature increases 1.5° to 2.0°, or even 2.5° F. in the first twenty-four hours. If a person who has been exposed to typhoid fever have a headache, and his temperature be 101.5° on the first day, it may be typhoid; but if, as is sometimes the case in persons who have been nursing, the temperature be below normal, or even if it be normal, you may be certain that there is not fever present. On the other hand, if on the first day the temperature be 105°, you may be certain that the disease is not typhoid. We see, therefore, that whether the temperature be too low or too high the thermometer will greatly assist us in making a diagnosis. The temperature goes on rising about 1.5° per diem till about the fifth or sixth day, when it reaches its maximum of about 103.5° or 104.0°, or even more. This is not absolutely true, because some persons may go through typhoid fever and know nothing at all about it. In this disease, therefore, we see that there is at first a long and uncertain prodromal stage, and then the onset of fever, which is insidious. Although the degree of temperature is reliable in determining the presence or absence of fever, the same cannot be said of the condition of the pulse, for, in nervous patients, the rapidity of the pulse may be greatly increased, and yet no fever be present. It therefore becomes an important thing to use the thermometer in practice; it will save many errors if used at the proper hour of the day—that is, in the afternoon.

To return to the course of typhoid fever, we find (still adhering to the chart) that on the twenty-first day the curved line suddenly runs into the straight line of ordinary health, and the fever is completed. In some cases, however, this does not take place till the twenty-eighth day. During this course we cannot give an answer to the queries of the patient's friends, "Is he better?" We must refer them to the chart, and tell them what is the course through which the disease must go. "We shall find no word 'better' written anywhere on the curve." Without this is borne in mind much annoyance may be given to the friends, for in the morning the patient may be cooler and appear better, but in the evening he is hotter and appears worse, and if the medical man were to alter his opinion according to the degree of temperature the friends might say that the attendant knew nothing whatever about the disease. It is necessary to wait the natural term of the disease before we can say whether the patient is better; moreover, we must bear in mind that two charts of the course of the disease may be drawn out, one in which the disease is represented as lasting twenty-one days, and the other in which it lasts twenty-eight days. But it is not always easy to say which is the twenty-first or twenty-eighth day, as it is so difficult often to fix the date at which the disease began; but by carefully recording the temperature we may tell the time to a couple of days. On the other hand, it is not always that we can say positively the patient is better on these days, for the disease may, as it were, begin again, and exactly repeat itself, and this repetition may last twenty-eight days more, or it

may even triple itself, as Sir William taught many years ago, when lecturing on this subject to the students at Guy's Hospital. This triple attack may last as long as the previous ones. These repetitions have been found on post-mortem examination to correspond with fresh outbreaks of the intestinal affection; for in these cases, should death occur, some of the ulcers will be found almost healed while others are just beginning to be affected. It is always necessary, therefore, to give a prognosis which shall allow of the possibility of these secondary attacks. But these repeated attacks do not necessarily last as long as the previous ones; they may be much shorter, lasting only one, two, or three weeks. So that typhoid fever may have a simple course of twenty-one days, or a prolonged course of twenty-eight days, or a double or triple course, the duration of which equals that of the previous attack; or lastly, a complex course—one or two attacks of ordinary duration, with another of shorter duration.

Now, in whatever manner the poison of typhoid is introduced into the system there is a concentration in the ileum. The presence or absence of diarrhœa depends on the implication or not of the large intestine. Although the ileum is the focus of the operation of the poison, yet it does not end here, for it is reflected to every organ of the body. The incidence of the poison is on the ileum, but the reflection is over the whole body. The body reacts to these conditions, and the fever is a reaction to the local condition of the bowels; but this does not imply that typhoid fever is a local affection of the bowels as was formerly taught. This poison reacts in other ways, as by setting up ulceration in various parts of the body. He was once called to the case of a young girl who was sickening of an illness. She had a discharge from the vagina, which led the medical attendant to doubt the girl's chastity; but he (Sir William) said that it was typhoid, and that the discharge was due to ulceration of the vagina. Another case, in Guy's Hospital, was treated as a gonorrhœa; but in reality the patient had ulceration of the prepuce from typhoid fever. In a third case, the patient had perforating ulceration of the larynx, and he suddenly became emphysematous over the body, which "floored" him (Sir William); but this case was shown after death to be one of ulceration of the larynx occurring in the course of typhoid fever. This disease then is not a local one, although the focus of the action is in the ileum. But to return to the chart. About the ninth day of the disease mischief begins to show itself in the intestines, and at this time the deposit may open up a large bloodvessel, and thus give rise to severe hemorrhage, or, if it go still deeper, perforation of the bowel may take place; or the bronchial membranes may become affected, or the bronchial glands enlarged, which may give rise by reflex action to spasm of the larynx. Every organ in the body is affected if the disease be severe. Every part of the body may be affected through the nervous system. There is a tendency to reaction. There may be pleurisy; or the enlarged mesenteric glands may soften and suppurate, which may be followed by purulent infection; or the kidneys may become diseased. In fact, any organ may become affected through the action of the nervous, venous, or other systems.

Now as to the treatment. This disease cannot be cut short, even in its early stage. Some have thought that it could be done by emetics, but few think so now. Others have thought that a purge of calomel and colocynth would cut short the attack, but this has been almost entirely given up. Others say that large doses of quinia will shorten the attack, or, at least, prevent serious complications; but Sir William related a case to which he was called, where large doses of quinia had been given, but the man was almost dead from hemorrhage, so that, in this case, the disease was neither cut short nor complications prevented. At the present time it must be granted that when once the patient has begun to go down the curve we must not dose him with medicines—we must not give him physic. The best thing is to place him in bed in a horizontal position, and reserve his nervous power, remembering that he must, if he live, go through the whole course of the disease.

He has to go through the reactions of his nervous, absorbent, and nutritive systems; he has, in fact, to go through "a great physiological storm." Let the patient alone then in this stage; "an early rest will save his power." But how is he to be treated through the remainder of the course? Is there anything to make the course less severe? Probably not. Quinia has been tried for this also, but has failed here as signally as when given to cut short the disease. It must be said that all the treatment consists of simple measures and simple diet. Medicines are only required for special conditions: for instance, if diarrhœa occur, some would give what is called "chalk mixture;" but we must remember that this has to go through about twenty-five feet of intestine. The best thing is to fill the rectum with five or six ounces of starch; it is not even necessary to put any opium with the starch. The diarrhœa only takes place when the rectum, sigmoid flexure, or descending colon is affected or irritated by acrid matters; hence, if you fill these the contact of noxious matters is prevented, and the diarrhœa checked. Time would not allow of more being said on this. [Here Sir William said he was not lecturing on typhoid fever, but only giving a few thoughts.] If hemorrhage occur, many would give gallic acid, or tannic acid, or lead, or some powerful astringent. But do not so; "don't begin with all your great guns at once." It is best to trust to the hemorrhage to cure itself, which it will do, and keep the patient at rest in the horizontal posture, giving a little opium (half a grain) by rectum or mouth if necessary to quiet the intestines. Ice may also be applied to the abdomen. This is sound advice, although it may appear terrible. The objection to giving lead or gallic acid or other powerful astringents is that they are apt to make the patient sick, and in that manner perhaps to make the hemorrhage worse. Often delirium comes on in the course of the disease. The patient may get out of bed, or even commit suicide by jumping out of the window. What is to be done for the delirium? In the first place, never leave the patient alone day or night after he has begun to descend the curve, for delirium may come on at any time; therefore, he must be constantly watched. In the treatment of this complication remember that it is due to brain-irritation, and not to inflammation, as some have imagined. There is one great remedy for this, and it is alcohol; alcohol is the remedy for nervous irritation in typhoid fever, and, in fact, in any fever. How it acts is not certainly known, but it may be laid down that it is an important point in the treatment of all fevers. It allays nervous irritation and soothes the nervous system. Whenever, therefore, there is delirium or reflex irritation, give alcohol in some form or another, as brandy or wine; but when the result has been obtained, stop it; only give it when it is necessary. In fevers the use of stimulants is for the delirium, and it in no way alters the local processes, but only the reflex condition. All cases do not require alcohol, and some only require it occasionally, and for a short time. Delirium even in the early stages may be checked by brandy, and never again come on during the whole course of the disease.

There is another point. Often the patient cannot or ought not to be moved out of the bed. How is he to pass his stools? There is a danger of bedsores if care be not exercised to prevent them; but no man who has a due care ought, under ordinary circumstances, to have a patient suffering from bedsores; sometimes, however, the circumstances are such that these sores cannot be prevented. The bed-pan may become the source of a bedsore which may carry off the patient. Avoid, therefore, every possible cause of irritation or abrasion of the skin. This is a point which is worthy of the consideration of every clinical physician. Again, it may be necessary to pass a catheter to draw off the patient's urine. Now this may be done in such a manner as to injure the urethra, which may be in a very tender state, and cause ulceration and severe symptoms, and even death. Use, then, a soft catheter, with all possible care and delicacy. In summing up he observed that the recovery from typhoid is dependent on attention to the smallest matters.

The time will come when this disease will become rare, or even die out.

We must save the patient's strength from the beginning, and not trust to medicines to cure the disease. The materia medica of fever is lessening every year.

Sir William would prefer to carry any one through typhoid fever by wines and soups and fresh air, rather than by the use of drugs.

HOSPITAL NOTES AND GLEANINGS.

Ununited Fracture of the Humerus successfully treated by Resection.—James W., aged 40, labourer, admitted into the Royal Infirmary, Edinburgh, March 7, 1871, under the care of Professor SPENCE, suffering from an ununited fracture of the humerus. The original injury was sustained twelve weeks before admission, from a fall upon the ice. The limb was set, but never united. Patient is a healthy-looking man, but of rather intemperate habits.

March 21. To-day Mr. Spence made an incision, three inches in length, over the seat of fracture, exposed the ends of the bone, and, without removing them from their bed of soft parts, cut off with the bone-pliers the rounded extremities of the bones. The arm was then put up in rectangular splints. It need only be remarked, further, that the wound healed well, without a single bad symptom supervening. The discharge was never copious, and the bone showed a great tendency to unite from the first.

On May 9, "wound almost healed; bone quite firm; patient gets up every day."

A few days subsequently he was sent to the Convalescent House, with the splint still applied, instruction being given him to make passive movement of fingers and wrist-joint. After being at the Convalescent House he returned to show himself. The bone was firmly united; the thickening considerable. He feels it quite strong, but the movements of the elbow are not yet free.

He was dismissed, but strictly enjoined to continue passive motion and the use of the warm douche, as he had been doing whilst in the hospital.

Remarks.—The foregoing case affords a favourable example of the good results of a method or modification of resection in cases of ununited fracture, which I first practised in a case of false joint of the humerus in 1854, which was published in the *Edinburgh Medical Journal* for that year. In regard to that case I remarked: —"In deciding on resection of the ends of the fractured bone, I determined to remove no more than the rounded and atrophied ends, and to do so with as little disturbance of the surrounding parts as possible. . . . Having often observed in cases which had come under my notice, in which resection had failed, that fully two inches, or even more, had been removed, it always seemed to me that not only the amount of bone thus removed, but also the great denudation required to effect its removal, might account for the failure, besides increasing the risk of severe constitutional disturbance." The principle of this method of resection is one in which I have great confidence; and considerable experience in performing it since 1854 has confirmed me in the opinion I then formed.—*Med. Times and Gaz.*, June 22, 1872.

Amputation of the Thigh for Disease of the Knee-Joint.—It is so rare for the thigh to be amputated for disease of the joint alone that we record the following case, which presented certain exceptional features, that, in the opinion of Mr. HENRY SMITH, precluded any other operation.

The patient was a young man aged twenty, who had suffered more or less from diseases of the knee for three years, and had been under various treatment in hospitals and elsewhere, sometimes improving and then retrograding. He was admitted into King's College Hospital in March, at which time there was considerable tumefaction of the knee and wasting of the thigh; there was severe pain on pressure over the patella and the external parts of the joint; frequent painful startings of the limb occurred at night; and the patient was much reduced in general health. Mr. Smith ordered local and general treatment, with the hope that anchylosis might occur; but, the symptoms continuing, it was resolved that excision of the knee should be performed.

A very careful examination of the patient, however, was instituted, and it was ascertained that the urine contained a large quantity of albumen. Under these circumstances the operation was deferred, with the hope that the quantity of albumen might diminish; but no material change occurred in that respect, and amputation was determined upon and performed, the ordinary flap operation being executed. On examining the joint, it was found to be in progress of entire disorganization, the cavity being filled with purulent matter, the cartilages ulcerated, and the synovial membrane degenerated.

Mr. Henry Smith, in his remarks, stated that his pupils would be surprised to see an amputation of the thigh performed for disease of the knee-joint alone in a young man, and, in fact, he had had a great struggle to bring his mind to perform this operation; but with the evidence they possessed of the presence of degeneration of the kidney, he considered it would be highly imprudent to perform excision of the knee-joint. For although he believed the shock of the two operations was about equal, there could be no doubt that in the long run there was a greater call upon the constitutional powers after excision. He had been educated in the principle that amputation of the thigh should not be adopted for disease of the knee-joint alone; but there were exceptions to this rule, and the case before them presented one of these exceptions. Much as he regretted having had to adopt the step, he was firmly convinced that he had done wisely in rejecting excision, whatever the result might be.—*Lancet*, June 1, 1872.

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Treatment of Ulcers.—Mr. Thomas Bryant has very extensively carried out the treatment of ulcers by skin-grafting, and believes that many cases are now rendered curable that were not so previously, that the cure of others is facilitated, and that interest is given to a class of cases which previously offered little clinical instruction. By the process of grafting, large surfaces speedily cicatrize, which, under former circumstances, would have required many months, and that, too, without the contractions and subsequent deformities which, under other conditions, were too well known to follow in such cases. The practice seems applicable wherever a large granulating surface exists, and the only essential point to observe is that the surface of the sore should be healthy; this clinical fact including another, that the patient's health is good, for there is no better barometer of health than a sore, its surface assuming a healthy or an unhealthy appearance with every alteration in the general condition of the body. Mr. Bryant has attempted, by way of experiment, to graft skin upon sores that were not quite healthy, and has sometimes succeeded. In an indolent sore, in which a small patch of healthy granulations sprang up, he has succeeded in securing by transplanting a new centre of "cutification," that proved of great value in aiding the healing process, but in a larger number he has failed in securing such an end. It may, therefore, he thinks, be accepted as a truth that a healthy granulating surface is an important requisite for success. Mr. Bryant uses a pair of scissors after those recommended by Dr. Macleod. They take away a portion of skin that will cut into three or four pieces, and the section includes only the upper layer of the true skin with rete mucosum. He generally takes the skin from the forepart of the arm or the inside of the thorax. The pieces of skin should be placed upon the granulations about half an inch or three-quarters of an inch from the margin of the sore, and about one inch apart, and gently pressed in. There is no necessity to wound the granulating surface. They should be covered with a piece of oiled gutta-percha skin, and the whole supported with cotton-wool; a bandage being subsequently applied, so as to press moderately upon the part, and keep the dressing in position. On the third day, not before, the dressings may be removed, the greatest care being needed; a fresh piece of oiled gutta-percha skin being subsequently applied. The appearances of the engrafted pieces on the removal of the first dressing vary considerably; at times they will seem palpably to have taken root and to be alive; at others

to have disappeared altogether; whilst in a third class the surface of the cuticle will be seen floating, as a thin film, upon the secretion of the sore, the basement membrane of the cuticle—the essential part—being left. Under all these circumstances, however, the surface of the sore is to be cleaned with the greatest care, a stream of tepid water, either squeezed from a sponge or injected from a syringe over the part, being the best means to employ. The surface is on no account to be wiped, for the grafted portions of skin are easily uprooted, whilst those that appear to have died or that have disappeared often reappear at a later period as "cutifying centres." As soon as the new centres are established in large sores, other pieces should be engrafted, at about the same distance from the new pieces as those originally inserted from the margin of the sore; and in this way the whole granulating surface may be speedily covered with new skin, and a rapid recovery take place. There seems no objection to mincing the portion of integument which is to be employed into minute fragments—that is, into pieces of the size of millet-seeds; the thumb-nail of the surgeon being the best table for the purpose. Recently the practice of applying "skin-dust," or the products obtained by scraping the skin, has found favour, and met with some success. In the few cases in which Mr. Bryant has tried it, the ulcers healed, but he has no evidence to show that any new cutifying centres were established by the proceeding. In the hands of Mr. Poland it has, however, been of value. Mr. Bryant doubts whether it is yet proved that the newly engrafted skin possesses the same power of resisting disintegrating changes as the old skin. Some observations which he has made have led him to suspect that it is somewhat prone to break down and ulcerate on the patient walking after the sore has completely healed, particularly when the subject is past middle age.—*Brit. Med. Journ.*, June 15, 1872.

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Incomplete Hemiplegia of the Right Side, with Partial Aphasia.—By J. LOCHART CLARKE. A lady who had come from the country to see her daughter, found in the course of a few days, that she was gradually losing the use of her right hand and arm. The first occasion on which she experienced this weakness was, that one day, after beginning to write, she found herself unable to continue. Very shortly afterwards, she found that she was losing power in the right leg, so that she had great difficulty in walking; she also felt a sensation of "pins and needles" in the right hand, but not in the foot; at the same time she complained of great loss of memory. She was frequently quite unable to recollect many of the words she wished to use; and sometimes she transposed her words, or used wrong ones. Her articulation was very indistinct; but she could protrude her tongue and move it in any direction. There was a dull "heavy" pain on the left parietal region of the head, with a sensation of "creeping or drawing up" of the scalp, and some deafness of the left ear. There was no cardiac murmur, or any other sign of heart-disease.

Her general health was much deranged. Her tongue was loaded; her breath offensive; her appetite was gone; and she complained of nausea and flatulence, with a sensation at the epigastrium "as if something wanted to be removed." Her skin was dirty-yellow; her bowels constipated; but her urine was clear and without albumen. She was ordered a mild aperient, a blister behind the left ear, and the following pills:—

℞.—Hydrarg. subchlor. gr. vj; ext. hyoscyam. ℈ijss. Ft. pil. xij. One to be taken night and morning.

At the end of a week I saw her again, and found her decidedly improved. After two or three days the pills produced brisk purgation. She was ordered to repeat the blister and continue the pills. At the end of another week the improvement was still more marked. Her memory was much better, her articulation more distinct, her right arm stronger, and she could walk without much difficulty; but she still complained of dull pain, and "drawing up" of the scalp on the left side of the head. The bowels had acted about twice daily, and the evacuations on passing caused a scalding sensation. The

blister was repeated, and the pills continued. At the end of the third week she was nearly well; all that she complained of was flatulency, and the creeping or drawing sensation in the scalp of the left side. Her skin had lost its previously dirty-yellow colour, and her appetite was keen. She was ordered to discontinue the pills, and to take some rhubarb, ammonia, and ether in peppermint water. A fortnight afterwards, she returned to the country quite well.—*Brit. Med. Journ.*, June 15, 1872.

MEDICAL NEWS.

DOMESTIC INTELLIGENCE.

Bromide of Potassium in Poisoning by Strychnia.—Dr. C. B. Bates, of Santa Barbara, reports (*Pacific Med. and Surg. Journal*, May, 1872) a case of a man aged 22 who took, with suicidal intent, about 10 grains of strychnia. "His stomach was empty at the time, having had nothing but a cup of tea for breakfast. Upon my arrival, about half an hour afterwards, I found him in a most violent tetanic convulsion, and at once forced him to swallow a dose of tartar emetic and ipecac; then I sent for a stomach pump, but before the return of the messenger the emetic had commenced to operate. Its action was kept up for some time by the administration of copious draughts of warm water and mustard and water until the stomach was thoroughly evacuated. During the whole of this time convulsions were recurring every few minutes, and as I was satisfied there could now be no more of the poison remaining in the stomach, I gave him one grain of sulphate of morphia with about forty of bromide of potassium. Soon the paroxysms decreased in violence, and the intervals of rest became longer. The bromide of potassium in doses of forty grains was repeated every hour until he had taken half an ounce when he was out of danger, and all that remained of the muscular spasm was an occasional jerking of the muscles of the lower jaw."

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Poisoning by Sulphate of Morphia.—The uncertainty of the action of medicines and correctness of the maxim of Hippocrates, "*Experientia falax, judicium difficile*," are forcibly illustrated by two cases of poisoning by morphia, related by Dr. H. A. DuBois (*Western Lancet*, June, 1872).

In the first case one-third of a grain of sulphate of morphia, injected hypodermically in a patient, an adult, suffering from colic, reduced the respiration to five in two minutes, produced profound stupor and almost total cessation of the circulation, and seven hours elapsed before, under appropriate treatment, the patient was restored to consciousness.

In the second case, a man unused to take morphia had swallowed at two doses upwards of eighty grains of sulphate of morphia, according to his own statement, which Dr. Du Bois thinks reliable, with the effect of producing delirium, followed by stupor, from which the patient recovered under treatment by stimulants and warmth and the administration of two ounces of tincture of belladonna in doses of a drachm every hour.

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Excision of the Kidney.—Dr. George A. Peters, it is stated (*Medical Record*, July 15, 1872), removed from a male patient at St. Luke's Hospital the right kidney for abscess of that organ. The result is not given.

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The Medical Register of New York and its Vicinity for the year commencing June 1, 1872. *Published under the supervision of the New York Medico-Historical Society*, A. E. McPurdy, editor. Vol. x.—We take pleasure in calling attention to this volume of 422 pages, which is replete with interesting information, and seems to be as comprehensive and complete as a work of the kind can be. In addition to a list of the physicians of New York city, their residences and office hours, it furnishes an account of all the medical institutions of the State, with the names of their officers, the medical societies with a list of their officers and members, also of those of New Jersey and Connecticut; an obstetrical table, equivalents of English and French weights and measures, a table of distances, postal information, hack fares, obituaries of New York phy-

sicians who have died during the past year, lists of medical periodicals issued in New York, of medical booksellers, of nurses, of pharmaceutists, etc. etc.—indeed nothing seems to have been omitted which could be desired in a work of the kind, and it reflects great credit upon its industrious author and on the society under the supervision of which it has been compiled.

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~~Bequests.~~—The late Wm. S. Rogers, of Boston, has bequeathed $50,000 to found a professorship of chemistry in Brown University, to be known as the Newport-Rogers Professorship. The late E. S. Pratt, of Buffalo, has bequeathed $10,000 to the Buffalo Hospital, New York. Our contemporary, the *Boston Medical and Surgical Journal* (June 27th), states that a few days ago the treasurer of the Massachusetts General Hospital received the large sum of $446,000, the bequest of the late John Redman. "Mr. Redman died some twenty years since, leaving a will by which the hospital was made the residuary legatee of his estate upon the death of a son who had a life interest in it. The advance in both real and personal estate since that time has increased the value of the legacy from $50,000, which the trustees of the institution once expected to receive, to nearly half a million."

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Heat of the Present Summer and its Effect on Mortality.—The temperature during the last week in June and the two first weeks in July has been almost unprecedently high, and with the result of largely increasing the mortality in our large cities, the principal victims being the very young and those of great age. The total number of deaths in Philadelphia during the week ending July 6th was 746, the largest number ever recorded here in any one week. Of these deaths, 512 were of children under five years of age, and 476 of children under two years of age. Cholera infantum claimed 274 victims, sunstroke 22, old age 20. In New York during the same week the mortality was even larger, having been 1567, more than 100 per cent. greater than in Philadelphia, while the population of the former is only about 40 per cent. greater than that of the latter.

The mortality in Philadelphia during the week ending July 13th was 852, of which number 497 were infants under two years of age; 383 of them being under one year. Cholera infantum had 310 victims, sunstroke 68, old age 29. In New York during the same week the mortality was 1056.

The heat in Philadelphia during the week ending July 20th was considerably lessened, and the mortality for the week was 587, being a decrease of 265 from those of the previous week. The deaths from cholera infantum were 210, from old age 14, sunstroke 10. From smallpox the deaths are reduced to only 6.

In New York the mortality was during the same week 961.

The extreme heat of the summer is not confined to this country. In Paris the heat was great, but the mortality had not increased at latest reports (28th June).

In India the heat has been, it is stated (*Lancet*, July 6th), exceptionally great. At Allahabad, at latest accounts, it had reached 115° in the shade, while at Hyderabad it was 116°.

FOREIGN INTELLIGENCE.

Hyperpyrexia; Treatment by Withdrawal of Heat.—It is a fact which no theory can alter, that if the temperature of the body rise up to, or above 107°, death is imminent; partly from the effect of the excessive heat on the vitality of organs, and partly from the excessive tissue-change which must be going on to produce this heat. Excessive and very rapid rise of temperature is seen more frequently in acute rheumatism than in any other disease. Dr. Wilson Fox relates a case in which, when the temperature was 107° in the rectum, the patient was placed in a bath at 96°; the heat, however, continuing to rise to 110° in the rectum, iced water was used and ice placed down the spine. In half an hour the temperature was reduced to 103.6°, and in another half hour to 99.5°. During this time six ounces of brandy were given, and subse-

quently eighteen ounces a day for several days.

The statistics published in Germany, comprising more than a thousand cases of typhoid fever, treated in various hospitals, show that the mortality in that disease has been reduced by more than one-half by the cooling treatment. This consists in not allowing the temperature to rise above a certain standard. If it does, it is at once lowered by baths or other means. This method of treatment is therefore not directed against the disease itself, but simply against a symptom, upon which a series of other symptoms depend. The patient is not plunged in a cold bath, but in one ten degrees below the heat of his body. It is only in certain cases that the use of absolutely cold water or ice is required. As many as ten or twelve baths in the twenty-four hours are sometimes required in order to keep down the excessive fever heat.

There can be no doubt that some cases prove fatal simply from the excessive temperature of the body consuming the tissues so rapidly. No case can long go on favourably with a temperature of say 106°, and as it is proved by a considerable amount of experience, especially in Germany, that an excessive temperature may, without any danger, be lowered artificially, this plan of treatment is imperatively called for in cases where an excessive temperature exists. Withdrawal of heat must, however, be practised with judgment, and not too rapidly, as the temperature will then swing back to and even beyond its former place. The rule ought to be, that the withdrawal of heat should be the slowest possible for the due attainment of our end. The patient should be placed in a bath of 100°, and the temperature of this gradually lowered, so that no shock is given to the system. On the removal from the bath quinia in doses of from five to twenty grains, according to circumstances, as advocated by Binz, will arrest the rapid reproduction of heat. This mode of treatment requires the incessant use of the thermometer, and the personal supervision of the medical attendant. A very interesting and successful illustrative case is related: it was one of cerebral rheumatism, which had supervened upon an ordinary attack of rheumatic fever, without heart affection. The temperature was 105.8°. A bath not being at hand, ice was put in five wide-necked bottles and placed in bed, close to the body, and ice also applied to the head. The cold was thus applied partially, and the same effect produced as by a less degree of cold applied to the whole surface of the body. — *Braithwaite's Retrospect*, Jan.—June, 1872.

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Diseases of the Muscular Walls of the Heart. — The Lumleian Lectures at the College of Physicians this year have been delivered by Dr. Quain. They treat of the Diseases of the Muscular Walls of the Heart. They have included matter of more than usual interest, and have thrown new light upon a scarcely recognized and hitherto unexplained form of disease. The lecturer described hypertrophy of the heart as a condition depending on an increase of any one of the elements which enter into the composition of its walls, its muscular fibres, its connective tissue, or its fatty tissue. With the hypertrophy depending on muscular tissue we are already familiar; it is the result of an increased development of power to meet obstruction in the course of the circulation. The hypertrophy of the fatty tissue is the result of the mere increase of fatty elements in the blood, which lead, in this particular situation, to the development of fatty tissue. The connective-tissue hypertrophy has been almost altogether lost sight of, apparently because it closely resembles, in its general appearances, ordinary muscular hypertrophy. Yet this pathological condition—connective-tissue hypertrophy — is utterly different in its origin and in its effects. A heart thus affected, when examined microscopically, is found to present to view not only the usual and limited amount of intermuscular connective tissue, but a decided hyperplasia of this tissue in all its stages of development from the globular to the spindle-shaped cell, and from this again to the formed bundle of fibrillæ. At the same time, the muscular bundles are seen surrounded

and compressed by this connective tissue. This condition is evidently due to a chronic myocarditis. A point of singular interest in the history of this investigation is, that it affords an adequate and scientific explanation of the origin of the change in those enormous hearts which are sometimes met with—cases in which diseases of the valves, pericardium, or kidneys, are alike absent. Our readers may probably remember an interesting lecture on this subject by Dr. Hyde Salter in these pages (July 28, 1866), describing the case with his usual fidelity and picturesqueness, and adding that it was one in which "the mind is baffled in seeking an intelligible solution of so difficult a problem;" and quite recently our Vienna correspondent (Dec. 16, 1871) directed attention, in clear and striking language, to one of these pathological puzzles, as they were and still are considered in the great school over which Rokitansky presides. The key to the problem was found in the investigation just described; and a striking example was afforded by the *à propos* examination by the lecturer of a specimen of a heart weighing forty ounces, which has long been preserved in St. George's Hospital Museum, where it was deposited more than thirty years ago, and has since been regarded as a remarkable example of hypertrophy, of which the cause was not sufficiently explained. Its proprietor was the well-fed under-butler of a ducal family, who might possibly have belonged to the class of extremely well-fed, not to say over-fed people, whom Niemeyer has considered to be the chosen subjects of idiopathic hypertrophy of the heart. The histological elements of the hypertrophy were shown by the preparations, which Dr. Quain placed upon the table, to consist chiefly in hyperplasia of the connective tissue. These specimens of disease not hitherto thoroughly identified are not to be regarded as mere pathological curiosities. The development of muscular fibre, connective tissue, and fat, having each a different origin, have also each a different therapeusis. In the first, we are warned to control overaction, and, so far as may be, to remove the obstruction which begets it; in the second or newly recognized form, which is the result of local inflammatory action, remedies ticketed formerly as antiphlogistic would be indicated; whilst the third calls for nutrient agents, and those which modify the development of fat.

It is always satisfactory, although not always possible, for a lecturer to be able to crown his work by the introduction of a novelty; and, although we can neither hope nor desire to be always hearing of new diseases, it is a matter of great importance so to study the recognized forms of disease as to analyze their real characters, and to identify species hitherto confounded. This is probably the most promising course of pathological research; for from it results a discrimination of the true character and origin of the particular condition to be treated, and therefore also the proper course of treatment for preventing the progress, arresting the development, or neutralizing the consequences of disease. Dr. Quain may be congratulated on having now added to his former services in the same field of investigation by his classical essay on *Fatty Degeneration*, wherein he defined its place as a retrograde metamorphosis, thus aiding in what Sir William Jenner, in his address to our Association at Leeds, described as "among the really great advances of medicine." Fully to understand the nature of the changes, and to identify this form of cardiac hypertrophy in the place which it will now take in medical literature, more detailed descriptions, with drawings, will be necessary; and these will be furnished with the text of the lectures, which, as we announced at the commencement of the year, will appear in our pages.—*Brit. Med. Journ.*, March 23, 1872.

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On the Use of Carbonate of Lithia in Gout and Uric Acid Gravel.—Prof. Dirterich, of Munich, states (*Schmidt's Jahrbücher*, Oct. 1871) that carbonate of lithia must always be considered as the most powerful remedy in gout and the morbid conditions depending upon excess of uric acid, and the salt has fallen somewhat into disrepute of late only in consequence of being unsuitably administered. The doses of five to ten grains, recommended

by Aschenbrenner, generally produce very unpleasant symptoms, as dyspepsia, catarrh of the stomach and bowels, with vomiting, etc., which require the discontinuance of the remedy. These doses, according to Prof. Ditterich, are much too large to act beneficially, and the single dose should never exceed twelve centigrammes (a centigramme is the hundredth part of a gramme, which is about 15 grains) and in twenty-four hours not more than a gramme should be given altogether. The next question to be asked in the treatment of gout, is whether the case presents itself in the acute or chronic form, for in the former lithia is unsuitable, but in the latter the carbonate may be given in the proportion of half a gramme (about 7½ grains) in a hundred and fifty grammes of distilled water, one or two teaspoonfuls to be taken every two hours. Thus administered the lithia causes no inconvenience and generally affords relief in from eight to fifteen days, during which the painful parts are covered with socks or linen coverings. According to Prof. Ditterich, the gouty swellings which have become hardened are not affected by the lithia circulating in the blood, until the adjacent parts of the limb have been brought into a state of congestion by stimulating embrocations. —*Brit. and For. Med.-Chir. Rev.*, April, 1872.

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On the Use of Ergot of Rye in Dysentery.—M. Luton, of Rheims, states (*Gaz. Hebdomadaire*, Oct. 1871) that during an epidemic of dysentery which lately prevailed at Rheims he employed in the cure of the disease most of the remedies which are considered efficacious, and met with various degrees of success. The epidemic was not a very severe one, and most of the patients recovered; but, in the majority of the cases, it appeared to M. Luton that the therapeutical action was not very evident, nor the relief rapid; and moreover some of the patients, especially among the most aged, died. It was therefore desirable that some new method of treatment should be found, which might give more satisfactory results, and the opportunity of doing so was offered by the case of a female patient, who was suffering at the same time from uterine hemorrhage and dysentery. The ergot of rye was prescribed successfully for the former malady, and it was found that the latter was likewise benefited by the remedy; and, in fact, as soon as the first doses had been given, a condition of constipation was induced, which lasted for four or five days. This first experiment led to the use of the ergot in simple dysentery, and it was found that an improvement in the symptoms, and eventually a complete cure, followed the new plan of treatment. M. Luton gave the ergot in powder, in the dose of 3 grammes (about 45 grains) a day, divided into doses of 50 centigrammes (about 7½ grains); and two or three days generally sufficed for a cure in ordinary cases. The ergot appeared to attack not only the hemorrhagic element of dysentery, but the whole disease; and the mucous secretions, the griping, colic, and fever, were equally relieved at the very commencement of the treatment.—*Brit. and For. Med.-Chir. Rev.*, April, 1872.

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Injection of Ammonia into the Veins as a Remedy in Snake Poisoning.—Through the courtesy of E. C. Bayley, Esq., Secretary to the Government of India, Home Department, we have had an opportunity of perusing a correspondence which has passed between Professor G. B. Halford of Melbourne, and Dr. Fayrer, on the efficacy of injecting liquor ammoniæ into the veins as a remedy for snake poisoning. Dr. Fayrer asserts that his frequently repeated experiments on the dog prove that in really severe and effectual bites this plan of treatment does no good, and that injecting any other stimulant would be of equal avail in cases, where stimulation might be beneficial. Professor Halford appeals to his experience of human beings, who had been bitten by the tiger snake, recovering under this plan of treatment, and says that experience gained by experiments on dogs may not be true with regard to men. There can be no denying that men have recovered after having been bitten, and subsequently had ammonia injected into the veins, but so have men who have been bitten and had no ammonia

injected. The matter is one for discriminating and unbiassed experiment and observation. Doctors are not remarkable for concord regarding questions less difficult of satisfactory solution than this, and the only way of settling this issue is to take every opportunity of putting the vaunted remedy to trial, carefully study the case, and record it. Both Fayrer and Halford agree in thinking that ammonia is a good stimulant, and should be given in all cases of snake poisoning. The question is—is Halford's plan of injecting it into the veins more effective than exhibiting it by the mouth or subcutaneously injecting it? We trust that those of our readers, to whom an opportunity of putting the practice to trial offers, may do so and report the result. It is always difficult in any case to say what might have happened, had a certain thing been done or not done; but accurately recorded clinical experience is the only safe ground of conjecture, and the only sound basis of assertion in such matters. The quantity of liquor ammoniæ recommended for injections of this kind is 30 minims of the liquor ammoniæ, B. P. specific gravity .959.

The treatment is said to be equally effective in asthenia arising from other poisons or causes; we have read of its successful employment in a case of poisoning by chlorodyne.—*Indian Medical Gazette*, June 1, 1872.

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Action of Phosphorus on the Bones.—At the Surgical Congress, held at Berlin in April, Herr GEORGE WEGENER detailed the results of his experiments on the action of phosphorus on the organism, so far as they are of surgical interest. He finds that the fumes of phosphorus always produce periostitis of the jaws and facial bones in animals when the periosteum has been injured; when this membrane has not been injured, this effect is only occasionally observed. Phosphorus vapour also acts as an irritant on the exposed periosteum of other bones, but less intensely than on the jaws. Phosphorus given internally in pills, or in the form of phosphorus acid, affects the bones generally; but the results vary according as the animal is growing or full-grown. In growing animals new bone is deposited in much thicker masses than in the normal state. For instance, at the end of the diaphyses of the joints and at the beginning of the epiphyses of the long bones, the cancellated tissue is replaced by perfectly compact bone; and those parts of the bone which are formed from the periosteum undergo thickening, to such an extent as even to obliterate the Haversian canals. In grown animals the cancelli and the Haversian canals are narrowed; and in the tubular bones the medullary canal is encroached on by an osseous layer, and has even been observed, in fowls, to become completely obliterated. When the bones have been artificially injured by fracture or resection, the effect of the internal administration of phosphorus is to produce a richer and thicker deposit of new bone, presenting, especially after fracture, the characters of ivory. This effect on osteoplasis is produced by the daily use of doses so small as not produce any toxic results, even though long continued. The practical question raised by Herr Wegener was, whether these results did not point out that phosphorus might be found useful in osteomalacia and in fractures, and also in caries and rickets.—*Brit. Med. Journ.*, June 15, 1872.

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Treatment of Hæmorrhoids. — Hæmorrhoids, connected with prolapsus, were successfully operated upon by the application of nitric acid some thirty years ago by Dr. Houston, of Dublin. The method found great favour at the time, but has been somewhat displaced by the ligature, and the section followed by the actual cautery. Billroth, of Vienna, has of late revived Houston's operation, and reports excellent results, especially in those cases where frequent and dangerous hemorrhage had occurred. — *Lancet*, June 1, 1872.

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Eucalyptus Globulus.—Prof. GUBLER, in a memoir published in the *Journ. de Pharm. et de Chimie*, states that all parts of this tree are impregnated with an aromatic substance, most abundant in the young branches, flowers, and leaves. The

febrifuge properties of the eucalyptus have been established by numerous observations. Under the name of "fever tree," it constitutes, in Australia and the neighbouring countries, the popular remedy against the prevailing fevers. The observations of a number of European physicians agree in placing its febrifuge powers in the most favourable light. Success in its use seems to be the rule, almost without exception, and it is in cases most rebellious to quinia and the other febrifuges that the leaves of the eucalyptus are reported to have produced the most remarkable results.

It would seem that these trees exert a marked hygienic influence wherever they are found. It is cited as a notorious fact that intermittent fevers are entirely unknown in regions favoured by their growth, whereas, in localities similar in respect to climate, soil, etc., but destitute of eucalyptus, the population is decimated by paludal fevers. It is generally supposed that the marsh miasms are neutralized by the aromatic emanation from the trees, but Prof. Gubler regards it as probable that the sanative results are to be in part attributed to the purifying effects of the offal of the foliage and the continually desquamating bark upon the stagnant waters. Of such waters travellers drink with impunity, whereas it is imprudent to drink from similar marshes not bordered by these trees.

Eucalyptus is employed as a stimulant and disinfectant dressing to wounds, and as an astringent and hæmostatic. It is useful in leucorrhœa; its success in this condition is attributed by Prof. Gubler to its toxic effect upon the several infusoria which exist in the vaginal secretion.

The power of the active principle of the eucalyptus in preventing the development of cryptogams is remarkable. Solutions of the salts of morphia, strychnia, atropia, aconita, and eserina, for hypodermic injection, prepared with water distilled from eucalyptus leaves, retained their limpidity for several weeks, while other solutions prepared with pure water became turbid with confervoid flocculi in a few days.

M. Cloez has discovered in the leaves of eucalyptus a volatile oil which he has designated *eucalyptol*, the formula of which is $C_{24}H_{20}O_2$, boiling between 170° and 175° C., and more or less soluble in alcohol, ether, and the fixed and volatile oils.

Eucalyptol possesses a peculiar, fragrant, aromatic odour. Its taste is aromatic, pungent, bitter, and slightly acrid. In moderate doses it is well tolerated. Large doses produce a slight sensation of burning in the mouth, extending to the throat and gullet, and exciting the secretions of the mucous membrane of the mouth and salivary glands. They cause a sense of weight in the stomach and interfere with the digestive process. In some cases, when largely given, headache, general excitation, great restlessness and fever are produced. These symptoms are of short duration, rarely continuing beyond a few hours. Such effects are never witnessed in the anæmic; with these, eucalyptol produces sleep. When breathed in too great quantity in a confined space, the vapours of eucalyptol produce symptoms of intoxication, sometimes accompanied with headache. The powdered leaves are prescribed in doses of from one to four drachms. The medium dose of eucalyptol is 15 to 20 grains.

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Use of the Essence of Eucalyptus Globulus to disguise the Odor and Taste of Cod-liver Oil.—The researches of Prof. Gubler on the *Eucalyptus Globulus* and its essence —Eucalyptol—has suggested to M. M. H. Duquesnel a trial of the effect of the Eucalyptol in masking the disagreeable flavour and odour of cod-liver oil, and the result, he says, has been most satisfactory. He mixes one hundred parts of cod-liver oil with one part of the essence of eucalyptus. The oil thus aromatized, he states, has neither the taste nor odor of cod-liver oil; it is readily swallowed and leaves in the mouth or on the tongue only the flavour of the essence with which it is mixed; and the disagreeable eructations which follow the taking of the pure oil are completely modified. The aromatized oil may be kept for a long time if the bottle in which it is placed be main-

tained very closely stoppered.—*Rev. de Thérap.*, June 15, 1872, from *Bull. de Thérap.*

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Cause of Uterine Movements.—A short paper of considerable interest to gynæcologists, by Drs. ASER and SCHLESINGER, appeared in No. 52 of the *Centralblatt für die Medicinischen Wissenschaften* for 1871. From numerous experiments, chiefly made on pregnant rabbits, in which the uterus was generally at rest when they began their observation, they discovered that, whenever the blood which circulated either through the brain or through the uterus itself became extremely venous, tetanic contraction of the uterus took place. As is well known, the blood which is contained in the vessels of any part of the body may be rendered venous in several ways. May be done by stopping the respiration, so that fresh air is prevented from reaching the blood in the lungs; in which case the blood becomes venous throughout the whole body. Or the same effect may be produced by arresting the circulation in a part, by tying either the arteries going to it or the veins returning from it, when the blood stagnates in the vessels, and becomes completely venous; so that this part of the body is, as it were, suffocated, while the rest of the body is well supplied with arterial blood. A third way of producing this condition is by bleeding profusely, so that too little blood is left in the body to keep up the circulation. Accordingly, the authors found that, when respiration was stopped in curarised rabbits, violent contractions of the uterus occurred in from ten to thirty seconds afterwards. This was due to the venous blood irritating the brain; and the same effect could be produced by cutting off its supply of blood through ligature of the innominate and the left carotid and subclavian arteries. Bleeding the animal nearly to death acted still more rapidly, and produced tetanic contractions of the uterus in between five and fifteen seconds. The irritation of the brain, which produced uterine contractions, was conducted down the spinal cord to the uterus; and, when the cord was divided, irritation of the brain in any of the ways just mentioned produced no effect. Stagnation of the blood in the uterus, produced by compression of the aorta, caused uterine movements of the same tetanic character, but which did not begin till the compression had been kept up from seventy to one hundred seconds, and were occasionally rather weaker than those which originated in irritation of the brain. If spontaneous movements of the uterus were present, they soon ceased after compression of the aorta was begun; and, when arterial blood was again allowed to circulate through the organ by removing the compression, a strong contraction of the entire uterus, quickly followed by rest, took place.—*Brit. Med. Journ.*, June 22, 1872.

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Amyloid Degeneration.—It is well known that amyloid degeneration is very common after long-continued suppurations, especially of bones and joints. But Professor CONHEIM gives (*Virchow's Archiv*, vol. liv., pts. i. and ii.) three cases in which it was found, after a suppuration of joints of only some months' duration. The suppurations occurred in healthy men from wounds received in battle. The spleen was affected in all the three, and the kidney in one, so that the amyloid degeneration was in an early stage. The author has no doubt that the degeneration was the result of the suppuration, and the cases are remarkable on account of its occurring after such a short period. —*Glasgow Med. Journ.*, May, 1872.

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Death after taking Hydrate of Chloral.—F. JOLLY (*Bayer Ærztl. Intell.-Blat*, 1872, Nos. 13 and 14) states that, in the course of two years, during which he has employed hydrate of chloral in the treatment of the insane, he had met with two cases of sudden death following its use. The dose was in each case below the average, and the chloral was chemically pure. The patients during life presented no contraindications to the use of the remedy. One had taken the chloral at night for four evenings in succession; on the fifth evening, after taking it, the respiration and circulation at once ceased. The necropsy showed anæmia of the brain, acute œdema of the lungs, hyperæmia of the abdominal

organs, a perfectly healthy heart and vessels, and dark fluid blood. In the other case, chloral had been given twelve days in succession, with the effect of producing sleep after a short stage of excitement. On the thirteenth day, the patient died, after some stertorous breathing, a quarter of an hour after the dose. There was here found moderate œdema of the lungs; the blood was fluid, but normally distributed; the heart was large and flabby, and its muscular structure was pale, but not friable.—*Brit. Med. Journ.*, June 22, 1872.

[It may reasonably be questioned whether the chloral hydrate had any influence in producing death in these cases.]

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Deaths from Chloroform.—On June 8, an inquest was held at King's College Hospital on the body of William Lyon, aged 36, who was an engine-driver, and had been under treatment at the hospital for an affection of the jaw-bone. It was considered necessary to perform an operation, and he was placed under the influence of chloroform, and two minutes after its administration he expired. A verdict that deceased died from paralysis of the heart, caused by chloroform, was returned.

The death of a patient while on the operating-table, under the influence of chloroform, occurred on the 27th of last month in the practice of the eminent Vienna surgeon Billroth. Disarticulation at the hip-joint was being performed, on account of osteomyelitis. The femoral artery had been tied, and Billroth was about to apply the galvano-caustic wire in order to divide the soft parts after the enucleation of the head of the bone, when the patient's breathing became stertorous, and he died. Tracheotomy was immediately performed; but it and all other attempts to restore life were fruitless.—*Brit. Med. Journ.*, June 15, 1872.

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Tests for Detecting Strychnia.—The *Popular Science Review* states that Dr. FILHOL, in a recent paper on this subject, maintains that strychnia should, in cases of poisoning, be obtained in the solid state; the alkalinity of its solution should be ascertained, as well as its intensely bitter taste; its behaviour with chlorine, and its blue coloration under the influence of sulphuric acid and oxidizing substances, should also be seen; while, lastly, as a very delicate reaction, Dr. Filhol observes that, with chloride of gold, strychnia (in solution) yields immediately a crystalline precipitate, which, although slowly, is yet distinctly formed in solutions containing one-tenth of a milligramme of the alkaloid. This precipitate and that formed by chlorine are at once dissolved by concentrated sulphuric acid, and, chromic acid being added, the well-known blue coloration that strychnia yields with this last reagent is produced. The presence of alcohol in liquids to be tested for strychnia should be avoided.—*Lancet*, April 27, 1872.

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Vital Statistics of France and Prussia.—A considerable sensation has been caused this week in France by the communication of M. DECAISNE to the Academy of Medicine of an important study on the depopulation of France, indicated by its present vital statistics. Comparing it with Prussia, he shows that there 100 marriages produce 460 children, while in France they give only 300. The percentage of births to population in Prussia is 3.98; in France, only 2.55. The annual excess of births over deaths in Prussia is 13,300 per million; in France, 2,400. As to the future, the French population would require one hundred and seventy years to double itself; that of Prussia, only forty-two; that of Great Britain, fifty-two; that of Russia, sixty years.—*Brit. Med. Journ.*, June 15, 1872.

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Cholera.—This disease is said to be spreading in Russia and in India. In the former it is gradually extending from the eastern to the central and western portions. At Moscow it is prevailing in a most malignant form, and a few cases have appeared at St. Petersburg. It behooves the authorities of our principal seaports to exercise the greatest vigilance to prevent, if possible, its introduction into this country.

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Thomas on Diseases of Women, as offered to the profession in this, its third edition, is the latest and best work in the English language (or we believe any other language) upon this subject. We have taken great interest in carefully perusing its pages, and find that he has given his opinions without apparent bias by what has been previously said either by himself or anybody else. If he wishes to condemn, he does so in a positive and manly way, and when he expresses opinions he carries conviction that he is correct. The comprehensive character of the work commends it to the profession, since nothing within its scope will be found wanting; it may truly be said to be complete in discussing every topic legitimately in this branch of practice. The older works upon diseases of women have proven almost obsolete, in the rapid process of this department of medicine. A few years makes it necessary to change much of the teaching or omit it altogether; revision of a work upon diseases of women has been a necessity. That it will be less necessary in the future, is quite improbable, since knowledge in this department is nearly all of it of comparatively recent date, and our present views and modes of procedure will be modified by experience and by the correcting influences of time. Meanwhile the work of Prof. Thomas may be relied upon as containing what is known of the diseases of women.—*Buffalo Med. and Surg. Journal*, June, 1872.

HENRY C. LEA, Philadelphia.